



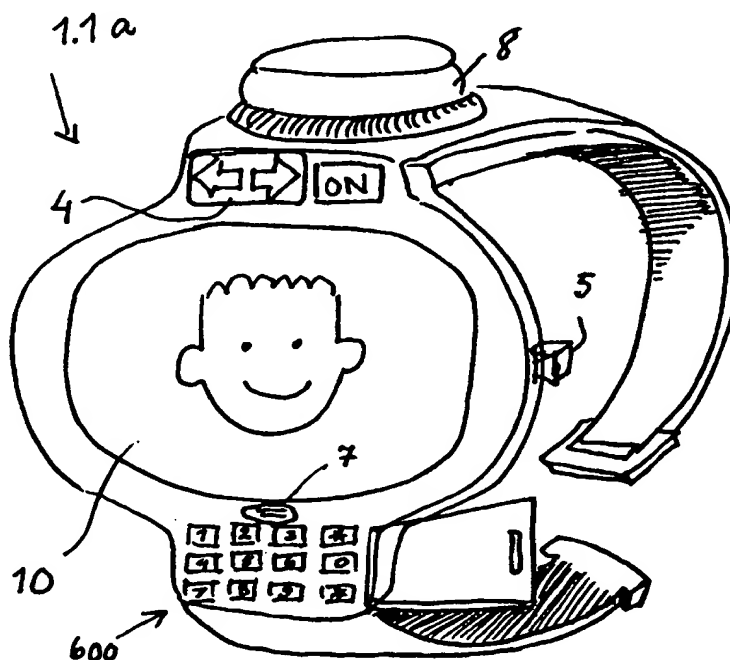
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/FI97/00703 (22) International Filing Date: 17 November 1997 (17.11.97) (71) Applicant (for all designated States except US): HELP SET OY [FI/FI]; Irmantie 3 F 38, FIN-90560 Oulu (FI). (71)(72) Applicant and Inventor: PUUMALAINEN, Taina, Tuulikki [FI/FI]; Irmantie 3 F 38, FIN-90560 Oulu (FI).		(81) Designated States: AU, CA, CN, DE, DK, EE, ES, FI, GB, IL, JP, LT, LV, NO, RU, SE, SG, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report. In English translation (filed in Finnish).

(54) Title: A PROCEDURE IN CONJUNCTION WITH MAKING A TELECOMMUNICATION CALL AND A TELECOMMUNICATION TERMINAL ARRANGEMENT

(57) Abstract

The subject of the present invention is a procedure and an equipment arrangement in conjunction with making a telecommunication call. In said procedure implemented in conjunction with making a call, means of searching included in a telecommunication terminal arrangement are used to directly or indirectly at least partly browse through dial numbers stored in said telecommunication terminal arrangement to locate a desired dial number. Means of commanding included in said telecommunication terminal arrangement are used to command a transmitter of said telecommunication terminal to begin making a direct or indirect call to a final, retrieved dial number. According to the present invention, in conjunction with said direct or indirect browsing, graphic information, which identifies the owner of each dial number and which is stored in a graphic memory of said telecommunication terminal arrangement, is displayed on a display of said telecommunication terminal arrangement.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 97/00703

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 1/274

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FI 88348 B (TELENOKIA OY), 19 November 1991 (19.11.91), figures 1-3, claims 1-6, abstract --	1-14
Y	US 5638438 A (DONALD M. KEEN), 10 June 1997 (10.06.97), column 1, line 18 - column 10, line 23, figures 1-6c, abstract -- -----	1-14

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FI 88348 B	19/11/91	FI 902466 A	19/11/91
US 5638438 A	10/06/97	CA 2149162 A	21/12/95

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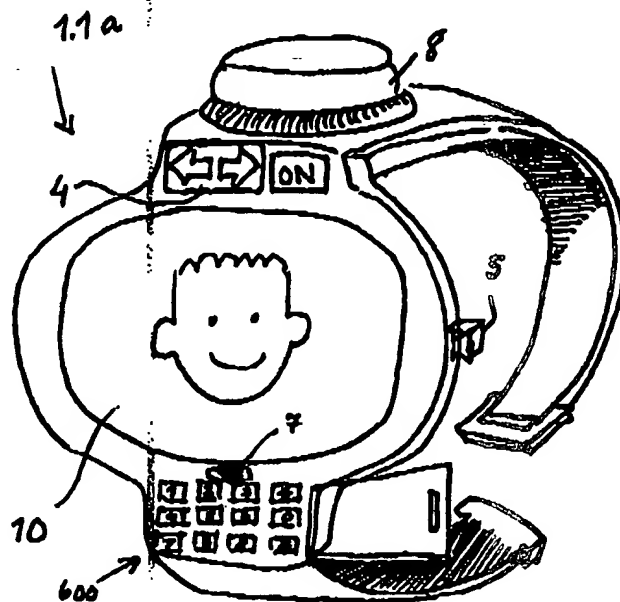
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(54) Title: **A PROCEDURE IN CONJUNCTION WITH MAKING A TELECOMMUNICATION CALL AND A TELECOMMUNICATION TERMINAL ARRANGEMENT**

(57) Abstract

The subject of the present invention is a procedure and an equipment arrangement in conjunction with making a telecommunication call. In said procedure implemented in conjunction with making a call, means of searching included in a telecommunication terminal arrangement are used to directly or indirectly at least partly browse through dial numbers stored in said telecommunication terminal arrangement to locate a desired dial number. Means of commanding included in said telecommunication terminal arrangement are used to command a transmitter of said telecommunication terminal to begin making a direct or indirect call to a final, retrieved dial number. According to the present invention, in conjunction with said direct or indirect browsing, graphic information, which identifies the owner of each dial number and which is stored in a graphic memory of said telecommunication terminal arrangement, is displayed on a display of said telecommunication terminal arrangement.



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A procedure in conjunction with making a telecommunication call and a telecommunication terminal arrangement

The subject of the present invention is a procedure in conjunction with making a telecommunication call, in which procedure means of searching included in a telecommunication terminal arrangement are used to directly or indirectly at least partly browse through dial numbers stored in said telecommunication terminal arrangement to locate a desired dial number, and means of commanding included in said telecommunication terminal arrangement are used to command a transmitter of said telecommunication terminal arrangement to begin making a direct or indirect call to a final, retrieved dial number, and in which procedure, in conjunction with said direct or indirect browsing, graphic information, which identifies the owner of each dial number and which is stored in a graphic memory of said telecommunication terminal arrangement, is displayed on a display of said telecommunication terminal arrangement.

The subject of the present invention also is a telecommunication terminal arrangement, which comprises a transmitter, a dial number memory and means of searching used to locate a desired dial number in said dial number memory, and means of commanding used to command said transmitter to begin making a call to a dial number retrieved from said dial number memory, and which arrangement comprises a graphic memory including graphic information which illustrates the owners of said dial numbers included in said dial number memory, which graphic memory is linked to function together with said dial number memory so that while directly or indirectly browsing said dial numbers, said arrangement displays graphic information related to said owner of said dial number on a display included in said arrangement and/or a display connected to said arrangement.

Because of aging and the complexity and difficulty of using devices, making a phone call is especially difficult for elderly people. For this reason, security phones have been developed which comprise a terminal bracelet connected via a transceiver to an actual terminal device located in an elderly person's residence, which terminal device is connected to a fixed telephone network. The bracelet comprises a button by which a call can be made, e.g., via the actual terminal device connected to the fixed network. A deficiency of said device is that it can only be used to call a specific number, and said device does not provide clear information about where the call is going to, or even information about whether or not the call has left.

Complete cellular network phones integrated into bracelets are known, e.g., described in publications EP-681 390 and EP-572 252, but they do not provide the user with sufficient and easily obtainable information about making a call.

For instance, GSM phones include a known solution whereby pressing the ABC key, for example, causes the display to display a text showing the name linked to each number in the phone number memory, but this function is difficult for an elderly person to perform, and on the other hand, this type of function is not sufficiently clear and informative.

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Another problem associated with solutions according to the prior art is that the user may accidentally call an emergency number, for example, whereupon an ambulance or the police make an unnecessary visit.

Publication WO-94/01958 describes a device intended for use in a vehicle, equipped with a hands-free function, including a voice-controlled audio menu that supplements or replaces a normal visual menu. The audio menu facilitates use of the device, but the device is still deficient when considering its use by elderly people and other persons with special needs.

In receiving a call, with GSM phones, for example, the use of A-subscriber recognition is known, whereby it is possible to show the name of the caller on the display, but said solution does not provide sufficient noticeable information.

The purpose of the present invention is to bring forth a new procedure and arrangement that avoids the problems associated with solutions of the prior art.

Said purpose is achieved by means of a procedure according to the present invention, characterized in that while displaying graphic information identifying owners of dial numbers shown on a display, a move occurs from one main category of graphic memory to another main category, and within a desired main category, a move occurs between subcategories and/or members of said main category.

Said purpose is achieved by means of a telecommunication terminal arrangement, characterized in that said graphic memory comprises a menu structure, which comprises several main categories, and said main categories comprise one or more subcategories and/or members of said main category.

The solution according to the present invention is based on the idea that the terminal device implements a graphic memory, which is linked to function together with a dial number memory/connection code memory.

The solution according to the present invention achieves several advantages. A device according to the present invention is very informative, as it shows the user graphic information, e.g., a picture of a relative, to inform the user that a number retrieved from the number memory is precisely the number of the relative the user wishes to call. The user can unconcernedly give a command to make a call, whereupon the phone begins to make a phone connection to said relative. Advantageous realizations and other specific realizations of the present invention emphasize the advantages of the invention. The telecommunication connection may be a voice connection, data connection or other connection.

The present invention is explained in more detail in the following, with references to the enclosed drawings.

Figure 1 presents a block diagram of an arrangement according to one embodiment.

Figure 2 presents a first embodiment of an arrangement.

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Figure 3 presents a menu structure of a graphic memory,

Figure 4 presents a menu structure illustrating one main category and a subcategory of said category

Figure 5 presents another embodiment of a display of a telecommunication terminal arrangement according to figure 2.

Referring to the figures, particularly figures 1 - 2, the object of the present invention is a telecommunication terminal arrangement 1 and a procedure used therein for making a telecommunication call and answering a telecommunication call. To begin with, the present invention is described as far as making a call is concerned.

The telecommunication terminal arrangement 1 comprises a transceiver 2, a dial number memory 3, i.e., a phone number memory 3, means of searching 4 used to locate a phone number from said phone number memory 3, and means of commanding 5 used to command said transceiver to attempt to make a call to a phone number retrieved from said phone number memory. Said arrangement also comprises a control unit 6, a microphone 7, earphones 8, an antenna 9, and a display 10. A dial number refers to an actual number or its code.

A telecommunication terminal arrangement 1 according to the present invention comprises a graphic memory 21 including graphic information which illustrates the owners of said phone numbers included in said phone number memory 3, which graphic memory is linked to function together with said phone number memory 3 so that while directly or indirectly browsing said phone number memory 3 said device is arranged to display graphic information related to said number (being currently accessed during said browsing procedure) on a display 10 included in said arrangement and/or a display connected to said arrangement.

Referring to figure 3, an advantageous embodiment of the present invention comprises a menu structure 30 comprising several main categories 31 - 34, and said main categories comprise one or more subcategories and/or members 31a - 31d, 32a - 32d, 33a - 33d, 34a - 34d of said main category. Said main categories of said menu structure 30 include one or more of the following main categories: health care services 31, transportation services 32, stores 33, authorities/agencies 34, relatives, friends, financial institutions. The example in figure 4 illustrates a health care services main category 31 and its subcategories 31a - 31d. Said subcategories are ambulance 31a, health care center physician 31b, apothecary 31c and health care center 31d.

In an advantageous embodiment of the present invention, said display 10 is a touch, pressure or otherwise sensitive display which also forms a means of commanding used to command said transceiver 2 to begin directly or indirectly making a call to a final retrieved phone number. In this case, separate means of commanding are not necessary, making said device easier to use.

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Direct (directly connected to a telecommunication network) calling means that, e.g., a bracelet-type complete device 1 calls a cellular network base station, for example, and thereby a final phone number. Indirect calling means that, e.g., a bracelet-type device 1 wirelessly first calls a terminal (not presented) included in said telecommunication terminal arrangement located in an elderly person's residence, and said terminal is connected to a telephone network via a normal fixed connection.

Referring especially to figure 2, in an advantageous embodiment of the present invention, said arrangement 1 is primarily formed into a single entirety, advantageously in the form of a bracelet 1a, which comprises said means, i.e., a transceiver 2, a phone number memory 3, a graphic memory 21, means of searching 4, means of commanding 5, a display 10 and/or a display connection, earphones 8 and/or an earphone jack, and a microphone 7 and/or a microphone connector. In such a case said device is compact and easy to use.

In an advantageous embodiment of the present invention, said arrangement 1 is realized using a cellular radio phone, such as a cellular radio phone operating in a GSM, DCS or CDMA system. Naturally, other types of networks and their terminal technologies are suitable.

Referring mainly to figure 1, it is stated that in an advantageous embodiment of the present invention, said display is a separate unit apart from an integrated entirety formed by said transceiver 2, phone number memory 3, graphic memory 21, means of searching 4, and means of commanding 5, said separate unit being connected by wire or wirelessly to said integrated entirety. In such a case in an advantageous embodiment said display is a television. In this embodiment it is possible to form a large color image. Nevertheless, according to the present applicant's observations, the best embodiment is in accordance with figure 1, i.e., said display 10 is included in said device 1a, because in that case said display is always with the user.

From the standpoint of a procedure, this is a question of a procedure in conjunction with making a telecommunication call. In said procedure, means of searching 4 included in a telecommunication terminal arrangement 1 are used to directly or indirectly at least partly browse through phone numbers stored in said telecommunication terminal arrangement to locate a desired phone number, and means of commanding 5 included in said telecommunication terminal arrangement are used to command a transceiver 2 of said telecommunication terminal to begin directly or indirectly making a call to a final retrieved phone number. In an embodiment including a display like the one presented in figure 1, the term at least partly browse means that naturally, a person does not need to browse through all of said phone numbers and/or all of said images, but rather, browsing is performed until the user has caused the graphic information linked to the desired phone number to be displayed. In an embodiment including a display like the one presented in figure 5, the term at least partly browse means that the user directly selects the desired image (and the number linked to said image).

In the procedure according to the present invention, while directly or indirectly browsing said phone numbers, said arrangement retrieves graphic information

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identifying each phone number from said graphic memory of said telecommunication terminal arrangement and displays said graphic information on said display 10 included in said telecommunication terminal arrangement.

The term indirect browsing is illustrated by means of the following advantageous embodiment. In an advantageous embodiment of the present invention, indirect, at least partial browsing of said phone numbers is performed by at least partly browsing through said graphic memory 21 linked to said phone number memory 3. Basically, however, this is a question of browsing through said phone number memory 3, because the contents of said phone number memory 3 are linked by pairs with the contents of said graphic memory 21. At the same time, the phone number linked to said displayed graphic information can be retrieved from said phone number memory 3. Said embodiment is advantageous because said phone number and/or a name linked to said phone number can also be displayed, and also because said number is already retrieved, whereupon the number associated with said image is known before the means of commanding 6 are used to give a command to make a call. In another embodiment of the present invention, a number is retrieved from said number memory only for the graphic information that at which the user ceases to browse the graphic memory 21 and commences to press or otherwise activate means of commanding 5, i.e., a phone number is retrieved only for the graphic information corresponding to the number to which the user wishes to call. The advantage of this embodiment is quicker, simpler operation.

The term direct partial browsing is illustrated by means of the following advantageous embodiment. In an advantageous embodiment of the present invention, direct, at least partial browsing of said phone numbers is performed by at least partly browsing through the phone number memory 3 linked to the graphic memory 21. The advantage of this embodiment is that the number is known and it can be shown on the display 10.

In an advantageous embodiment of the present invention, said graphic information is color and/or black and white graphic information similar to photographic information. In figure 1 the graphic information shows an elderly person's grandchild, for example.

In an advantageous embodiment of the present invention, said graphic information covers a significant part, advantageously at least 50 - 80 %, perhaps even 100 % of the display of said telecommunication terminal arrangement 1. Most advantageously, said display 10 is almost completely covered, except for a part of said display that conventionally shows a phone number or the name of the owner of a phone number or other information.

In an advantageous embodiment of the present invention, a move is made from one image to the next in the graphic memory by touching, pressing or otherwise activating said display, for example by using means of searching 4 to move to the next graphic information. This feature simplifies use.

In an advantageous embodiment of the present invention, after a specified time delay, said graphic information is automatically replaced by said next graphic information. A

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delay element is represented by block 200. This type of autoscrolling facilitates use of the device. In an advantageous embodiment said time delay is a few seconds, for example, 3 - 6 seconds.

The following also refers to figure 5. Figure 5 presents second embodiment of a display 10 of a telecommunication terminal arrangement according to figure 2, which version comprises several display parts 10a - 10i. In said version of figure 5, all said display units display graphic information, and the user selects one of these by pressing or otherwise indication a selection. Thus, said graphic information is already displayed before said user has performed a search. However, according to the applicant's observations, said version is not as advantageous as the previously described version, where said images are displayed by turn, allowing a large image as shown in figure 2. The version presented in figure 5 is included in the basic idea of the present invention, because the user's deliberation and selection of one image from among many can be considered partial browsing of phone numbers, where browsing is performed only for one number. i.e., the selected number.

In a certain other embodiment figure 5 can be interpreted as such that the images are images of a main menu, and images found "under" said main category are images belonging to said main category. This means, for example, that "under" the main category image icon in display part 10f, which presents agencies, there is graphic information related to agencies, which is accessible by pressing, and telephone numbers linked to said graphic information are naturally stored in said phone number memory 3.

In an advantageous embodiment of the present invention, the search for a number can be made even clearer by using audio memory 300 in addition to graphic memory. Said audio memory uses a hearing aid 8 or speaker or other means of producing sound to relay an audio signal informing the user the identity of the owner of the phone number being currently accessed while browsing said phone number memory 3. Said audio signal is created in conjunction with said graphic information, providing the most effective result. Most advantageously said audio memory 300 and graphic memory 21 are essentially the same means of memory, which includes multimedia-type graphic and audio information. Said stored graphic and audio information can be realized by means of a suitable integrated memory circuit.

Said arrangement may also include a conventional keyboard 600, particularly when a device is in question that also functions as a normal terminal device of a cellular radio network. Said device may also comprise means or at least a connection by which the information content of memory 21 and/or 300 can be modified.

Also referring to figure 1, the object of the present invention is a procedure and telecommunication terminal arrangement in conjunction with receiving a telecommunication call in call reception. Said device comprises a receiver part 2, RX, a connection code memory (e.g., a phone number memory) 3, and means of identifying 700 used to identify a connection code in a telecommunication call to said telecommunication terminal. Said arrangement also comprises a graphic memory 21 including graphic information which illustrates the owners of said connection codes

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included in said connection code memory 3, which graphic memory is linked to function together with said connection code memory 3 and means of identifying 700 so that said arrangement displays graphic information related to said owners of said connection codes on a display 10 included in said arrangement and/or a display connected to said arrangement. In an example situation according to figures 1 and 2, said display 10 of said arrangement 1 displays the image of the person calling his/her own number in said arrangement.

The part of the procedure of the present invention concerning reception of a telecommunication call is a question of displaying graphic information identifying the owner of said connection code found in said graphic memory 21 included in said telecommunication terminal arrangement on said display 10 of said telecommunication terminal arrangement. Thus, said device identifies the number from which a call has come and retrieves graphic information corresponding to said number from said graphic memory and displays said graphic information on said display 10.

Thus, said connection code may be a caller's phone number, but said connection code may also be e.g., an identifying code or similar code on which basis said telecommunication arrangement retrieves information related to said code from said graphic memory, which information may be advertisement information, for example. The effect can be enhanced by presenting audio information describing said caller/advertiser.

Although the present invention is described in detail above with references to example embodiments presented in the enclosed figures, it is clear that the present invention is not limited by the presented example embodiments, but rather it can be modified in many ways to the extent of the innovation described by the enclosed claims.

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Claims

1. A procedure in conjunction with making a telecommunication call, in which procedure means of searching (4 or 10a - 10i) included in a telecommunication terminal arrangement (1, 1a) are used to directly or indirectly at least partly browse through dial numbers stored in said telecommunication terminal arrangement to locate a desired dial number, and means of commanding (5 or 10, 10a - 10i) included in said telecommunication terminal arrangement are used to command a transmitter (2, TX) of said telecommunication terminal to begin making a call to a final, retrieved dial number, and in which procedure, in conjunction with said direct or indirect browsing, graphic information, which identifies the owner of each dial number and which is stored in a graphic memory (21) of said telecommunication terminal arrangement, is displayed on a display (10) of said telecommunication terminal arrangement.

is characterized in that while displaying said graphic information identifying said owners of said dial numbers on said display, a move occurs from one main category of said graphic memory to another main category, and within a desired main category, a move occurs between subcategories and/or members of said main category.

2. The procedure according to claim 1, characterized in that said graphic information is color and/or black and white information similar to photographic information.

3. The procedure according to claim 1, characterized in that said graphic information fills a significant part, advantageously 50 - 100 %, of said display (10) of said telecommunication terminal arrangement.

4. The procedure according to claim 1, characterized in that said indirect, at least partial browsing of said dial numbers is performed by at least partially browsing said graphic memory (21) linked to a dial number memory (3).

5. The procedure according to claim 1, characterized in that said direct, at least partial browsing of said dial numbers is performed by at least partially browsing a dial number memory (3) linked to said graphic memory (21).

6. The procedure according to claim 1, characterized in that within said graphic memory (21), a move occurs to the next image by touching or pressing an image or by other means.

7. The procedure according to claim 1, characterized in that after a specific delay controlled by a delay unit (200), said displayed graphic information is replaced by the next graphic information.

8. A telecommunication terminal arrangement, which comprises a transmitter (2, TX), a dial number memory (3) and means of searching (4) used to locate a desired dial number in said dial number memory (3), and means of commanding (5) used to command said transmitter (2) to begin making a call to a dial number retrieved from said dial number memory (3), and which arrangement comprises a graphic memory

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(21) including graphic information which illustrates the owners of said dial numbers included in said dial number memory (3), which graphic memory is linked to function together with said dial number memory (3) so that while directly or indirectly browsing said dial numbers, said arrangement displays graphic information related to said owners of said dial numbers on a display (10) included in said arrangement and/or a display connected to said arrangement.

is characterized in that said graphic memory comprises a menu structure (30), which comprises several main categories (31 - 34), and said main categories comprise one or more subcategories and/or members (31a - 31d) of said main category.

9. The arrangement according to claim 8, characterized in that said main categories of said menu structure (30) include one or more of the following main categories (31 - 34): health care services, authorities, relatives, friends, stores, financial institutions.

10. The arrangement according to claim 8, characterized in that said display (10, 10a - 10i) is a touch, pressure, or otherwise sensitive display which also forms a means of commanding.

11. The arrangement according to claim 8, characterized in that said arrangement is primarily formed into a single entirety (1a), advantageously in the form of a bracelet, which comprises said means, which are a transmitter (2, TX), a dial number memory (3), a graphic memory (21), means of searching (4), means of commanding (5), a display (10) and/or a display connector, earphones (8) and/or an earphone jack, and a microphone (7) and/or a microphone connector.

12. The arrangement according to claim 8, characterized in that said display (10), which advantageously is a television, is a unit separate from said integrated entirety comprising a transmitter (2, TX), a dial number memory (3), a graphic memory (21), means of searching (4), and means of commanding (5), and which unit is connected by wire or wirelessly to said integrated entirety.

13. The arrangement according to claim 8, characterized in that said arrangement is realized using a cellular phone, such as a cellular radio phone operating in a GSM, DCS or CDMA system.

14. The arrangement according to claim 8, characterized in that said graphic memory is linked to function together with an audio memory (300) included in said arrangement, whereby said graphic memory and audio memory form a memory device which includes multimedia-type graphic and audio information.

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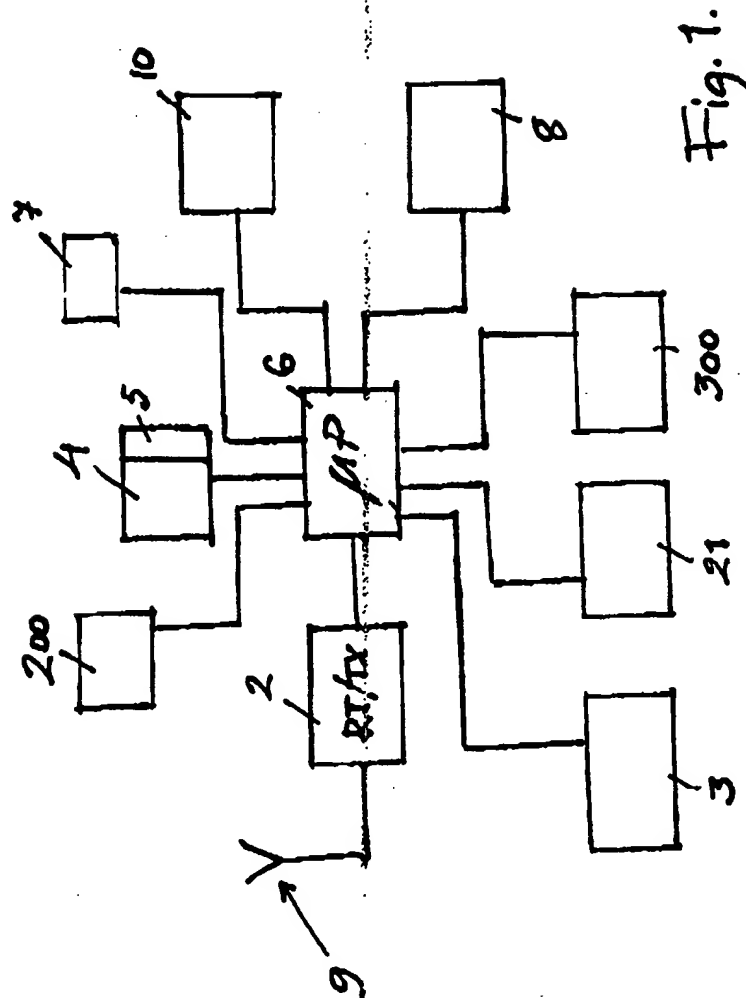
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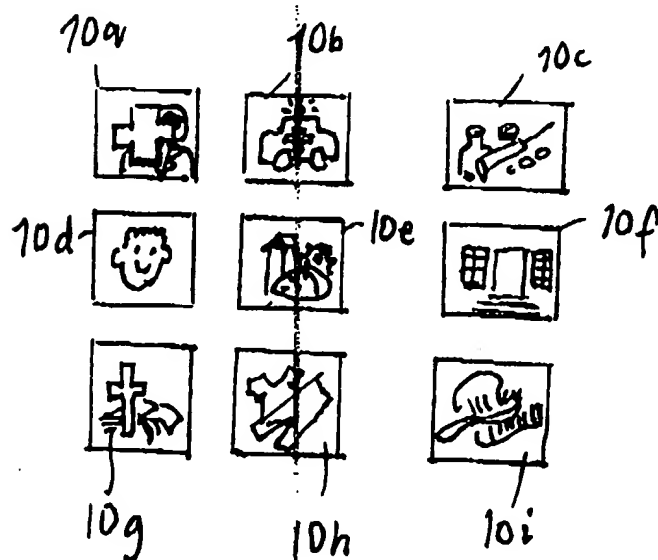
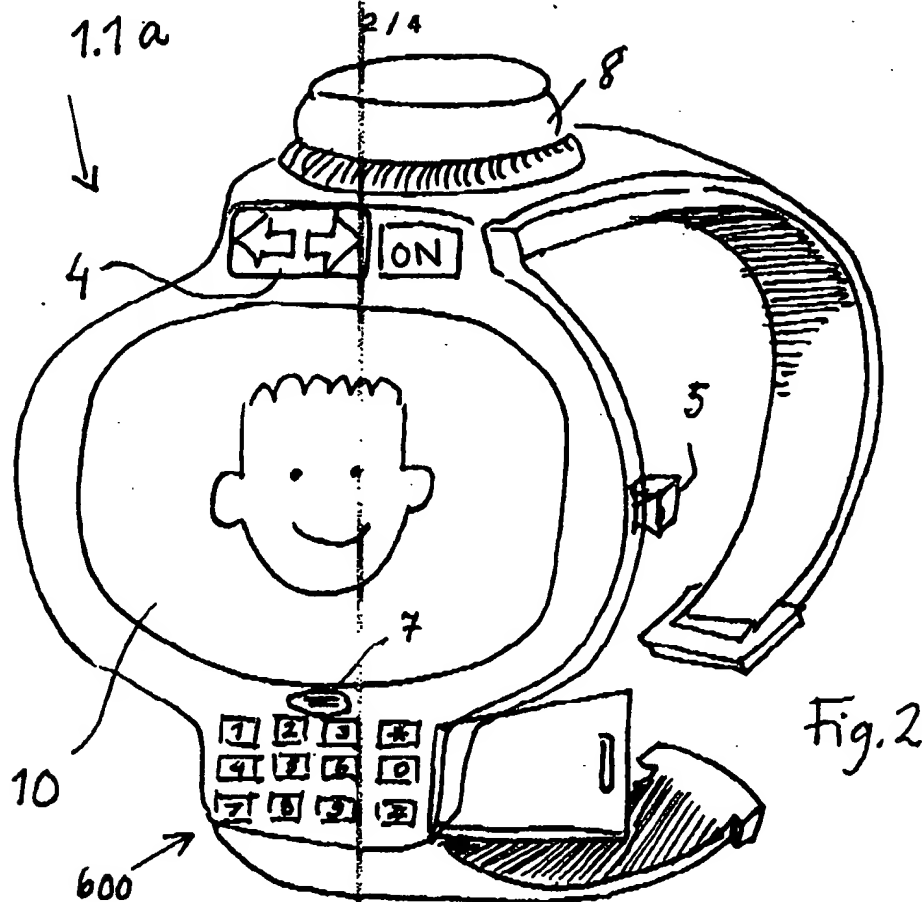


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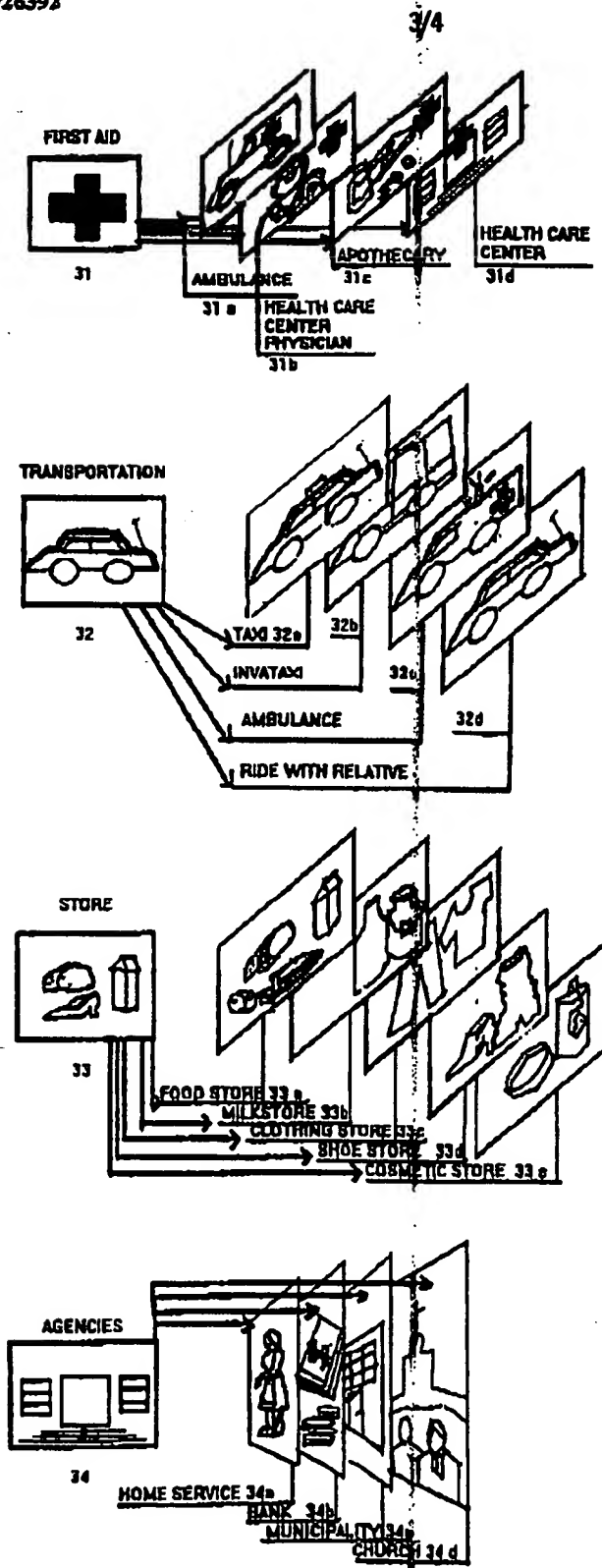


Fig. 3

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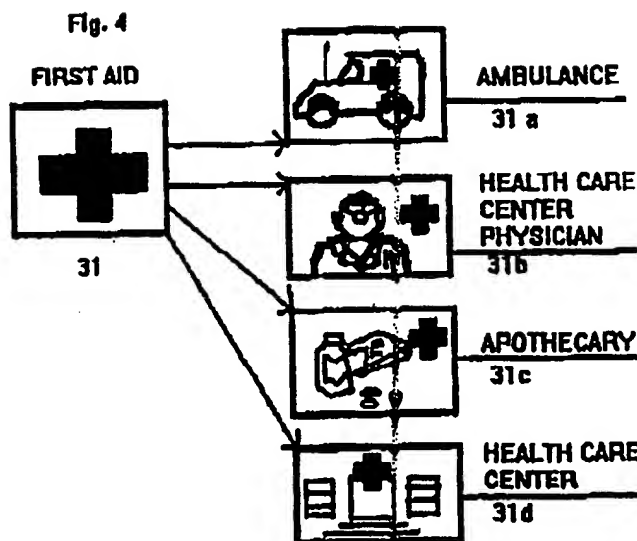
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 97/00703

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04M 1/274

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FI 88348 B (TELENOKIA OY), 19 November 1991 (19.11.91), figures 1-3, claims 1-6, abstract	1-14
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Y	US 5638438 A (DONALD M. KEEN), 10 June 1997 (10.06.97), column 1, line 18 - column 10, line 23, figures 1-6c, abstract	1-14
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☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

10 July 1998

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Date of mailing of the international search report

13-07-1998

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INTERNATIONAL SEARCH REPORT

Information on patent family members

30/06/98

International application No.

PCT/FI 97/00703

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FI 88348 B	19/11/91	FI 902466 A	19/11/91
US 5638438 A	10/06/97	CA 2149162 A	21/12/95